

CLAIMS

What is claimed is:

1. An article for texturing an electrode having a tip hardness and a tip contour, the article comprising:
a plate having an upper surface and a lower surface; and
an indentation in at least one of the upper and the lower surface, the indentation having a textured surface comprising a plurality of asperities, the textured surface having a hardness greater than the tip hardness of the electrode;
wherein the texture of the textured surface is imprinted into the tip of the electrode in response to the tip of the electrode and the textured surface being pressed against each other.
2. The article of Claim 1, wherein the textured surface has a contour that mirrors the tip contour of the electrode.
3. The article of Claim 2, wherein the contour of the textured surface has a radius that is equal to or greater than a corresponding radius of the tip of the electrode.
4. The article of Claim 3, wherein the contour of the textured surface is spherical.
5. The article of Claim 1, wherein the plurality of asperities at the textured surface produce a plurality of sharp asperities at the tip of the electrode suitable to penetrate an oxide layer on a surface of a metal part in response to the tip of the electrode and the surface of the metal part being pressed against each other.
6. The article of Claim 5, wherein the plurality of asperities at the textured surface has an average roughness depth of equal to or greater than about 10 microns and equal to or less than about 50 microns.

7. The article of Claim 1, wherein the plate is sized for imprinting a texture into the tip of the electrode absent removal of the electrode from the welding device in which the electrode is installed.

8. The article of Claim 1, wherein the indentation is in each of the upper surface and the lower surface, the indentation in the upper surface for texturing an upper electrode and the indentation in the lower surface for simultaneously texturing a lower electrode.

9. A method of texturing an electrode having a tip hardness and a tip contour, the method comprising:

placing a tool between a first electrode and a stop surface, the tool having an upper surface and a lower surface, an indentation being in at least one of the upper and the lower surface, the indentation having a textured surface comprising a plurality of asperities, the textured surface having a hardness greater than the tip hardness of the first electrode;

pressing the first electrode against the tool such that the tip of the first electrode is pressed against the textured surface of the tool, thereby imprinting the texture of the textured surface into the tip of the first electrode; and

reversing the pressing action and removing the tool from between the first electrode and the stop surface.

10. The method of Claim 9, wherein the indentation has a contour that mirrors the tip contour of the first electrode.

11. The method of Claim 10, wherein the imprinting further comprises imprinting a spherical texture from the tool to the tip of the first electrode.

12. The method of Claim 10, wherein the imprinting further comprises imprinting a plurality of sharp asperities from the tool to the tip of the first electrode,

the sharp asperities being suitable to penetrate an oxide layer on a surface of a metal part in response to the tip of the first electrode and the surface of the metal part being pressed against each other.

13. The method of Claim 9, wherein the first electrode is installed in a welding device, and further comprising placing the tool between the first electrode and the stop surface without removing the first electrode from the welding device.

14. The method of Claim 13, wherein:

the stop surface comprises a second electrode having a tip hardness and a tip contour, the upper surface comprises a first indentation having a textured surface, the lower surface comprises a second indentation having a textured surface, the first indentation has a contour that mirrors the tip contour of the first electrode, the second indentation has a contour that mirrors the tip contour of the second electrode; and

the pressing the electrode against the tool comprises pressing the first electrode against the textured surface of the first indentation while simultaneously pressing the second electrode against the textured surface of the second indentation, thereby simultaneously imprinting a textured surface into the tips of each of the first electrode and the second electrode.

15. The method of Claim 14, wherein the contours of the first and the second textured surfaces are the same.

16. The method of Claim 14, wherein the contours of the first and the second textured surfaces are different.

17. A method of roughening an electrode having a tip hardness and a tip contour by using the article of Claim 1, the method comprising:

placing a tool between a first electrode and a stop surface, the tool having an upper surface and a lower surface, an indentation being in at least one of the upper and the lower surface, the indentation having a textured surface comprising a plurality of

asperities, the textured surface having a hardness greater than the tip hardness of the first electrode;

pressing the first electrode against the tool such that the tip of the first electrode is pressed against the textured surface of the tool;

rotating the tool about the axis of the first electrode, thereby roughening the surface of the tip of the first electrode; and

reversing the pressing action and removing the tool from between the first electrode and the stop surface.

18. The method of Claim 17, wherein the indentation has a contour that mirrors the tip contour of the first electrode.

19. The method of Claim 18, wherein the roughening further comprises imparting a spherical surface contour from the tool to the tip of the first electrode.

20. The method of Claim 18, wherein the roughening further comprises creating a plurality of concentric rings of sharp asperities on the tip of the first electrode, the sharp asperities being suitable to penetrate an oxide layer on a surface of a metal part in response to the tip of the first electrode and the surface of the metal part being pressed against each other.

21. The method of Claim 17, wherein the first electrode is installed in a welding device, and further comprising placing the tool between the first electrode and the stop surface without removing the first electrode from the welding device.

22. The method of Claim 21, wherein:

the stop surface comprises a second electrode having a tip hardness and a tip contour, the upper surface comprises a first indentation having a textured surface, the lower surface comprises a second indentation having a textured surface, the first indentation has a contour that mirrors the tip contour of the first electrode, the second indentation has a contour that mirrors the tip contour of the second electrode; and

the pressing the electrode against the tool comprises pressing the first electrode against the textured surface of the first indentation while simultaneously pressing the second electrode against the textured surface of the second indentation, thereby simultaneously creating a roughened surface on the tips of each of the first electrode and the second electrode.

23. The method of Claim 22, wherein the contours of the first and the second textured surfaces are the same.

24. The method of Claim 22, wherein the contours of the first and the second textured surfaces are different.